

Technical Description

Available in the popular 18mm tubular housing, the **BOS 18M** optical sensor family provides additional durability by using an epoxy filled, metal housing. These sensors solve tough applications where environmental conditions might cause typical optical sensors to prematurely fail.

All sensors are designed for operating voltage of 10 to 30 V DC, are polarity reversible, and are short circuit protected. They are available with PNP or NPN output and light-on or dark-on switching. A green LED provides indication of reliable operation (contamination). The sensitivity can be adjusted with a potentiometer.

Available Models

The **Retroreflective** is equipped with a polarizing filter for reliable detection of highly reflective objects (i.e., packing with shiny surfaces).

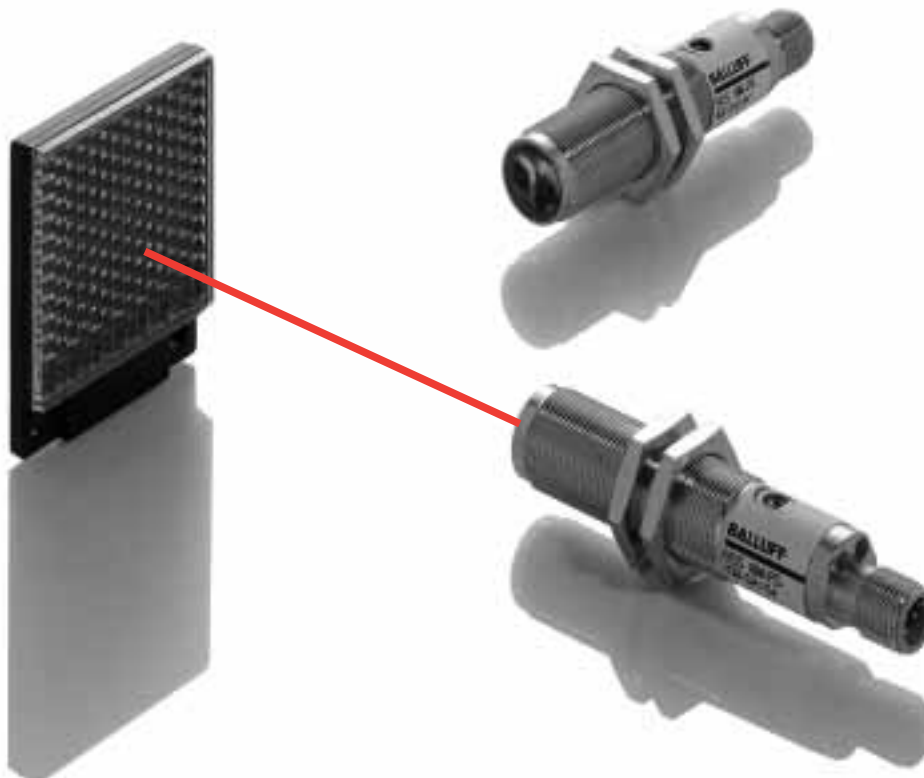
The **Diffuse** with a focused red light beam and a sensing distance of 14 mm is especially useful for precise object sensing and small part recognition.

Features

- Supply voltage 10...30 V DC, reverse polarity protected
- Output short protected
- Safe operating margin indicator (green LED) on BOS 18M...KX/QB
- Function display for output (red LED)
- IP 67 housing
- Standard metal housing (M18x1)
- High immunity to ambient light and noise spikes
- Potentiometer for sensitivity adjustment

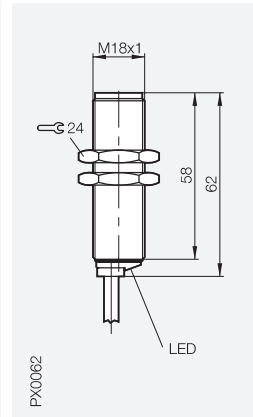
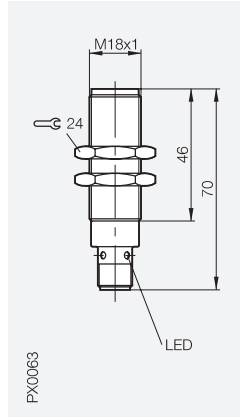
Applications

- Machine tool
- Packaging
- Parts counting
- Small parts recognition
- Assembly and handling automation
- Conveying
- Machine building



**BOS 18M, DC
Diffuse, No Adjustment**

Housing size		M18x1	M18x1
Diffuse Sensing range		100 mm/200 mm	100 mm/200 mm



Diffuse

PNP ○ 100mm ①	BOS 18M-PS-1XA-E5-C-S 4	BOS 18M-PS-1XA-E4-C
PNP ● 100mm ②	BOS 18M-PO-1XA-E5-C-S 4	BOS 18M-PO-1XA-E4-C
PNP ○ 200mm ①	BOS 18M-PS-1XB-E5-C-S 4	BOS 18M-PS-1XB-E4-C
PNP ● 200mm ②	BOS 18M-PO-1XB-E5-C-S 4	BOS 18M-PO-1XB-E4-C

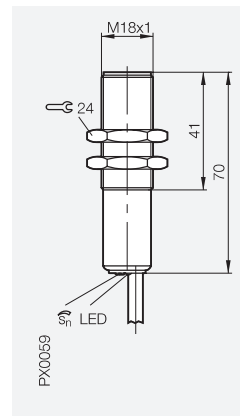
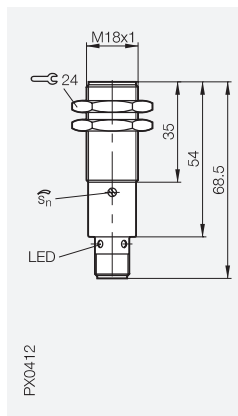
Supply voltage U_B	10...30 V DC	10...30 V DC
Voltage drop U_d at I_B	≤ 2.5 V	≤ 2.5 V
Rated isolation voltage U_i	250 V DC	250 V DC
Rated operational current I_B	200 mA	200 mA
No-load supply current I_0	≤ 20 mA	≤ 20 mA
Short circuit protected	yes	yes
Permissible capacitance	1 μ F	1 μ F
On/Off delay	5 ms	5 ms
Frequency of operating cycles	100 Hz	100 Hz
Utilization category	DC 13	DC 13
Output	PNP	PNP
Output function	○ or ●	○ or ●
Emitter Light Source	Infrared 880nm	Infrared 880nm
Permissible ambient light	2000 Lux	2000 Lux
Sensitivity adjustment	no	no
Output function indication	yes	yes
Stability indication	no	no
Ambient temperature range T_a	-5...+55 °C	-5...+55 °C
Degree of protection per IEC 529	IP 67	IP 67
Housing material	Nickel plated brass	Nickel plated brass
Material of sensing face	BOS PMMA/BLS glass	BOS PMMA/BLS glass
Connection	Connector	Cable
No. of wires x conductor cross section		3 x 22AWG
Weight	40 g	150 g with 3 m Cable
Recommended connector	BKS-S 19/BKS-S 20	

Note: Diffuse values referenced to Kodak white card 90 % reflective. Retroreflective values based on Balluff R1 reflector.

Tubular Optical Sensors

BOS 18M, DC Diffuse, Adjustable

Series		BOS 18M	BOS 18M
Diffuse Sensing range		400mm adjustable	400mm adjustable
Retroreflective Sensing range			
Thru-Beam Sensing range			



2



Diffuse

PNP	○	400mm Adjustable	①		BOS 18M-PS-1PD-E4-C
PNP	●	400mm Adjustable	②		BOS 18M-PO-1PD-E4-C
PNP	○/●	400mm Adjustable	③	BOS 18M-PA-1PD-E5-C-S 4	
NPN	○/●	400mm Adjustable	⑦	BOS 18M-NA-1PD-E5-C-S 4	

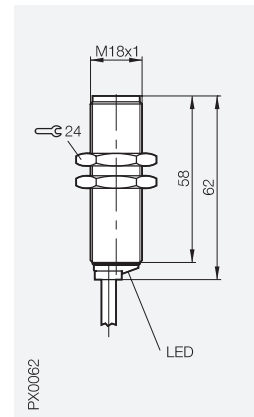
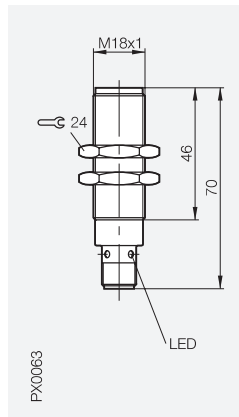
Supply voltage U_B	10...30 V DC	10...30 V DC
Voltage drop U_d at I_B	≤ 2.5 V	≤ 2.5 V
Rated isolation voltage U_i	75 V DC	75 V DC
Rated operational current I_B	200 mA	200 mA
No-load supply current I_0	≤ 20 mA	≤ 20 mA
Short circuit protected	yes	yes
Permissible capacitance	0.3 μ F	0.3 μ F
On/Off delay	5 ms	5 ms
Frequency of operating cycles	100 Hz	100 Hz
Utilization category	DC 13	DC 13
Output	PNP/NPN	PNP
Output function	○/●	○/●
Emitter Light Source	Infrared 880nm	Infrared 880nm
Permissible ambient light	5000 Lux	5000 Lux
Sensitivity adjustment	Potentiometer 0...270°	Potentiometer 0...270°
Output function indication	yes	yes
Stability indication	no	no
Ambient temperature range T_a	-5...+55 °C	-5...+55 °C
Degree of protection per IEC 529	IP 65	IP 65
Insulation class		
Housing material	Nickel plated brass	Nickel plated brass
Material of sensing face	PMMA	PMMA
Connection	Connector	Cable
No. of wires \times conductor cross section		3 X 22 AWG
Weight	40 g	150g with 2m cable
Recommended connector	BKS-S 19/BKS-S 20	

○/● = Light-On/Dark-On

Note: Diffuse values referenced to Kodak white card 90% reflective. Retroreflective values referenced to Balluff R1 reflector

**BOS 18M, DC,
Retroreflective,
Thru-Beam**

Series	BOS 18M	BOS 18M
Diffuse	Sensing range	
Retroreflective	Sensing range	2 m/4 m Fixed
Thru-Beam	Sensing range	16 m



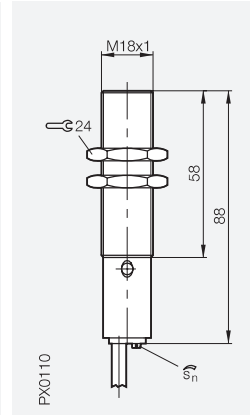
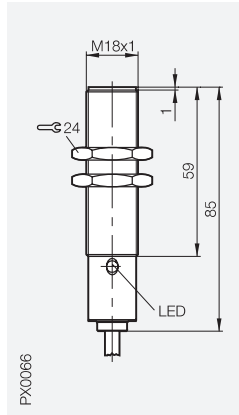
	Retroreflective				
	PNP	●	2m Fixed	BOS 18M-PS-1RB-E5-C-S4	BOS 18M-PS-1RB-E4-C
	PNP	○	2m Fixed	BOS 18M-PO-1RB-E5-C-S4	BOS 18M-PO-1RB-E4-C
	PNP	●	4m Fixed	BOS 18M-PS-1RD-E5-C-S4	BOS 18M-PS-1RD-E4-C
	PNP	○	4m Fixed	BOS 18M-PO-1RD-E5-C-S4	BOS 18M-PO-1RD-E4-C
	Polarized Retroreflective				
	PNP	○/●	2m Adjustable, Red Light	BOS 18M-PA-1QB-E5-C-S4	BOS 18M-PA-1QB-E4-C
	NPN	○/●	2m Adjustable, Red Light	BOS 18M-NA-1QB-E5-C-S4	BOS 18M-NA-1QB-E4-C
	Thru-Beam				
	PNP	●	16m Fixed Receiver	BLE 18M-PS-1P-E5-C-S4	BLE 18M-PS-1P-E4-C
	PNP	○	16m Fixed Receiver	BLE 18M-PO-1P-E5-C-S4	BLE 18M-PO-1P-E4-C
	Emitter			BLS 18M-XX-1P-E5-L-S4	BLS 18M-XX-1P-E4-L

Supply voltage U_B	10...30 V DC	10...30 V DC
Voltage drop U_d at I_B	≤ 2.5 V	≤ 2.5 V
Rated isolation voltage U_i	250 V DC	250 V DC
Rated operational current I_B	200 mA	200 mA
No-load supply current I_0	≤ 20 mA/BLS ≤ 40 mA	≤ 20 mA/ BLS≤ 40mA
Short circuit protected	yes	yes
Permissible capacitance	1 μF	1 μF
On/Off delay	5 ms	5 ms
Frequency of operating cycles	100 Hz	100 Hz
Utilization category	DC 13	DC 13
Output	PNP/NPN	PNP/NPN
Output function	○ or ●	○ or ●
Emitter Light Source	Infrared (880nm)	Infrared (880nm)
	Pol. Retro Red (660nm)	Pol. Retro Red (660nm)
Permissible ambient light	2000 Lux	2000 Lux
Sensitivity adjustment	Pol. retro only	Pol. retro only
Output function indication	no	yes
Stability indication	no	no
Ambient temperature range T_a	-5...+55 °C	-5...+55 °C
Degree of protection per IEC 529	IP67	IP 67
Insulation class	II	II
Housing material	Nickel plated brass	Nickel plated brass
Material of sensing face	PMMA	PMMA
Connection	Connector	Cable
No. of wires × conductor cross section		22 AWG
Weight	40 g	150 g with 3 m cable
Recommended connector	BKS-S19/BKS-S20	

Tubular Optical Sensors

BOS 18M, AC

Housing size		M18x1	M18x1
Diffuse	Sensing range	100 mm/200 mm	200 mm with Potentiometer
Retroreflective	Sensing range	2 m	
Thru-Beam	Sensing range		



2

Diffuse



AC	○	100 mm	⑬
AC	●	100 mm	⑭
AC	○	200 mm	⑬
AC	○	200 mm	⑬

Retroreflective



AC	●	2 m	⑬
AC	○	2 m	⑭

BOS 18M-WS-7XA-B0-L	
BOS 18M-WO-7XA-B0-L	
BOS 18M-WS-7XB-B0-L	
BOS 18M-WS-7PB-B1-L	

BOS 18M-WS-7RB-B0-L	
BOS 18M-WO-7RB-B0-L	

Supply voltage U_B	20...250 V AC	20...250 V AC
Voltage drop U_d at I_e	≤ 4 V	≤ 4 V
Rated isolation voltage U_i	250 V	250 V
Rated operational current I_e	200 mA	200 mA
No-load supply current I_0	≤ 15 mA	≤ 15 mA
Short circuit protected	no	no
Permissible capacitance		
Turn-on delay	50 ms	50 ms
Frequency of operating cycles	10 Hz	10 Hz
Utilization category	AC 140	AC 140
Output	diode bridge	diode bridge
Output function	○ or ●	○
Emitter Light Source	Infrared (880nm)	Infrared (880nm)
Permissible ambient light	5000 Lux	5000 Lux
Sensitivity adjustment	no	yes
Output function indication	yes	yes
Stability indication	no	no
Ambient temperature range T_a	-5...+55 °C	-5...+55 °C
Degree of protection per IEC 529	IP 67	IP 67
Insulation class	II	II
Housing material	Nickel plated brass	Nickel plated brass
Material of sensing face	PMMA	PMMA
Connection	Cable	Cable
No. of wires × conductor cross section	3 × 22 AWG	3 × 22 AWG
Weight	160 g	160 g

○/● = Light-On/Dark-On

Note: For sensors with potted fixed cable, please indicate desired length in ordering code!
 03, 05 = PVC length 3 m or 5 m
 PU-03, PU-05 = PuFlex length 3 m or 5 m